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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/632,600	08/01/2003	John F. McEntee	10010116-1	4325

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EXAMINER
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MOSS, KERI A

ART UNIT	PAPER NUMBER
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1743

DATE MAILED: 04/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/632,600	Applicant(s) MCENTEE ET AL.	
	Examiner Keri A. Moss	Art Unit 1743	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 26 January 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-39 is/are pending in the application.
- 4a) Of the above claim(s) 14-29, 37 and 38 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13, 30-36 and 39 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>8/1/03 (01 Aug 2003)</u> | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-13, 30-36 and 39 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. What is meant by the term "modify"? Is there attachment of the particulates to the surface? Does the surface erode? The specification discloses that the surface may be cleaned or polished and this description has to be in the claim.

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-6, 9-11 and 39 are rejected under 35 U.S.C. 102(b) as being anticipated by Yoshida (USP 6,221,118). Yoshida discloses a method of modifying a substrate surface by contacting the surface with a particulate-comprising fluid having a pH above the isoelectric point of the substrate (column

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3 lines 17-27) and ultrasonically agitating the particulate-comprising fluid to modify the substrate surface (abstract). With respect to the particulate-comprising fluid, water meets the pH limitations of claim 1 (see instant application claim 9). The particulate-comprising fluid may be non-acidic or basic (column 3 lines 17-27). The particles may be 30nm – 3 microns (column 1 line 43-column 2 line 3), anticipating the claimed range. Yoshida's teaching of a particulate composition of 0.1 to 10% by weight reads on the claimed 1-50% by volume (column 2 line 54- column 3 line 16). The particulates are metal oxides. The particulates are elastic relative to the substrate (column 1 lines 24-27), which may be glass (column 6 lines 30-43).

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

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5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshida in view of Dalton (USP 4328,047). Yoshida does not disclose the frequency at which the particulate-comprising fluid is agitated. It is well known to those of ordinary skill in the art that the typical ultrasonic device agitates at a frequency of 80 kHz (Dalton column 2 lines 34-36). Therefore it would have been obvious to one of ordinary skill in the art to agitate the particulate-comprising fluid at approximately 80 kHz.

7. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshida in view of Rupe (USP 4,116,851). Yoshida does not disclose particulates having a specific gravity substantially the same as the fluid. It is well known to those of ordinary skill in the art that when insoluble particles have

approximately the same specific gravity as the fluid, the particles will remain suspended in the fluid (Rupe column 6 lines 25-34). It would have been obvious to one of ordinary skill in the art to modify either the fluid or the particles so that they would have substantially the same specific gravity to gain the advantage of the particles remaining suspended in the fluid.

8. Claims 1-6, 9-13 and 30-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller (USP 5,418,136) in view of Yoshida, *supra*. With respect to claims 12-13 and 30-36, Miller discloses a method for producing a biopolymeric array comprising modifying the substrate (column 57 lines 3-7) and producing an array of probes on the modified substrate (column 29 line 28 – column 30 line 8). Miller teaches producing the array on glass (column 4 line 18- column 5 line 9) that is laser-scribed (column 19 lines 3-9), performing a binding assay (column 6 lines 9-22), and reading the biopolymeric array (column 7 lines 44-57). The result of the reading is obtained and transmitted to a remote location (column 8 lines 46-59).

While Miller does not disclose the manner in which the substrate should be modified, Miller teaches that the modification step must remove particles from the substrate (column 57 lines 3-7). Yoshida provides a method for modifying a substrate (Yoshida, *supra*) by polishing, which removes particles. Yoshida teaches contacting the surface with a particulate-comprising fluid having a pH above the isoelectric point of the substrate (column 3 lines 17-27) and ultrasonically agitating the particulate-comprising fluid to modify the substrate

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surface (abstract). With respect to the particulate-comprising fluid, water meets the pH limitations of claim 1 (see instant application claim 9). The particulate-comprising fluid may be non-acidic or basic (column 3 lines 17-27). The particles may be 30nm – 3 microns (column 1 line 43-column 2 line 3), anticipating the claimed range. Yoshida's teaching of a particulate composition of 0.1 to 10% by weight reads on the claimed 1-50% by volume (column 2 line 54- column 3 line 16). The particulates are metal oxides. The particulates are elastic relative to the substrate (column 1 lines 24-27), which may be glass (column 6 lines 30-43). In addition, Yoshida teaches that the advantage of using cerium oxide abrasives to modify a substrate is that they do not cause scratching of the surface during the modification (column 1 lines 39-42). An additional advantage is that the surface modification may be done at a high rate (column 1 lines 39-42). It would have been obvious to one of ordinary skill in the art to combine the Miller method of producing a biopolymer array to incorporate the Yoshida method for polishing a substrate surface in order to remove particles from the surface without scratching it and to gain the advantage of hastening the surface modification step.

9. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshida in view of Miller as applied to claim 1 above, and further in view of Dalton (USP 4328,047). Yoshida does not disclose the frequency at which the particulate-comprising fluid is agitated. It is well known to those of ordinary skill in the art that the typical ultrasonic device agitates at a frequency of 80 kHz

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(Dalton column 2 lines 34-36). Therefore it would have been obvious to one of ordinary skill in the art to agitate the particulate-comprising fluid at approximately 80 kHz.

10. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshida in view of Miller as applied to claim 1 above, and further in view of Rupe (USP 4,116,851). Yoshida does not disclose particulates having a specific gravity substantially the same as the fluid. It is well known to those of ordinary skill in the art that when insoluble particles have approximately the same specific gravity as the fluid, the particles will remain suspended in the fluid (Rupe column 6 lines 25-34). It would have been obvious to one of ordinary skill in the art to modify either the fluid or the particles so that they would have substantially the same specific gravity to gain the advantage of the particles remaining suspended in the fluid.

### ***Conclusion***

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Kodera (JP 58048682 A) anticipates claim 1 by disclosing a method of modifying a substrate surface by ultrasonic agitation of a particulate-comprising fluid.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Keri A. Moss whose telephone number is 571-272-8267. The examiner can normally be reached on 9-5:30.




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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on (571)272-1700. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

3/20/06 KAM

  
YELENA GAKH  
PRIMARY EXAMINER